

**AUSTRALIAN SPECIES OF LISTROPHORIDAE CANEST (ACARINA)
WITH NOTES ON THE NEW GENERA**

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No records of this family of Acarina from Australia appear to have been published since the original description of the following two genera and species:

- 1 *Chirodiscus amplexans* Trt. and Neum. 1890 (Bull. Sci. Fr. Belg., 22, 392, pl. 21) from *Podargus strigoides* (Tawny-shouldered Frog-mouth or Mopoke) from South Australia.
- 2 *Campylochirus chelopus* Trt. 1893 (C-R Soc. Biol. Paris, 45, 699) from *Pseudocheirus convoluta* Oken 1816 = *cookii* Desm. 1818 (Ringtail Possum) from Tasmania.

Both these records are repeated in Canestrini and Kramer's monograph on the "Demodicidae and Sarcoptidae" in "Das Tierreich," Lfg. 7, 27 and 28, 1899, but the first is omitted from Rainbow's "Synopsis of Australian Acarina (Rec. Austr. Mus. 6, (3), 1906). Canestrini and Kramer (*loc. cit.*, 29) regard the occurrence of *C. amplexans* on a bird (*Podargus strigoides*) as accidental and suggest that its true host was most probably a species of marsupial.

Recently C. Gunther (Proc. Linn. Soc. N.S.W., 67 (3 and 4), 109, 1942), in erecting a new genus *Ncolabidocarpus* for his species (*Labidocarpus bulotocensis* Gunther 1940 (*ibid* 65, (3 and 4), 353) has subdivided the family into a number of well-defined subfamilies and published a key to the subfamilies and genera based upon that of Ewing (Manual of External Parasites, 1929).

Unfortunately, several errors and omissions have crept into his paper which need to be corrected.

In the first place, in his key, in caption 3, the words "Body depressed" have been transposed with "Body compressed" in the next line. As given by Ewing 1929, however, these respective statements are in their correct place and the error in Gunther's key is probably one of transcription.

In this table of generic distribution and hosts, he is in error in giving the locality of *Listrophoroides* Hirst as Orange Free State, West Africa; that given by Hirst was Accra, Gold Coast. No reference is made to Ferris' record of a species attributed to *Listrophoroides* from the Marquesas (Marquesan Insects, (1), Bull. 98, B. P. Bishop Museum, 1932), nor does Gunther seem to have been aware of a species, also attributed to the same genus, described by Radford 1939 (Parasitology, 31) from Cape Town. As will be shown later, however, the first of these species does not belong to this genus.

Ewing (1929) synonymises Hirst's *Chirodiscoides* 1917 with *Campylochirus* Trt. 1893, and although he is possibly correct in this, Troussart's original work is not available to me and Hirst, unfortunately, does not describe the dorsal surface and has only figured (in 1922) the ventral surface of the male of *Chirodiscoides carviac* from guinea pigs.

Listrophoroides aethiopicus Hirst 1923 is, so far, only known from the male, and here again in his original description he neither mentions nor figures the dorsal surface, so that it is not possible without reference to the type slide to say whether it has any dorsal scuta or not. Radford also (1939), in describing *Listrophoroides bathyergians* from a male from Cape Town ignores, both by description and figures, the dorsal surface, while his figures of the ventral surface of both sexes leave much to the imagination.

Ferris, however, in his paper gives some excellent detailed figures of his species *Listrophoroides expansus* showing both dorsal and ventral aspects. He was rather doubtful about the placing of his species in the genus, and it certainly does require a new genus, although one cannot point at present to the differences of the dorsal surface between this and *Listrophoroides* Hirst.

KEY TO THE SUBFAMILIES AND GENERA OF LISTROPHORIDAE

- 1 Legs I and II modified as claspers.
 Legs III and IV modified as claspers. *Myocoptinae* Gunth. 1942 9
 Maxillae modified as claspers. *Listrophorinae* Gunth. 1942 10
- 2 Legs I and II with caruncles, not highly modified. Sometimes with accessory claspers. *Atopomelinae* Gunth. 1942 3
 Legs I and II without caruncles, highly modified. Without accessory claspers. *Labidocarpinae* Gunth. 1942 6
- 3 Body compressed. Sternal region between coxae II and III with clam-like accessory claspers. Leg of ♂ very large. Gen. *Atopomelus* Trt. 1918
 Body depressed. Sternal region without claspers. 4
- 4 All coxae widely separated medially. Palpi 2-segmented. Three dorsal scuta. Gen. *Marquesania* nov. for *Listrophoroides* Ferris 1932 nec Hirst 1923
 Coxae I and II touching medially, large, inner areas striated, III and IV widely separated. 5
 All coxae touching in medial line, without striations. Front legs not unduly flattened and incurved or hook-like. Leg IV shorter in ♂ than ♀, and thicker. Dorsally with a single anterior scutum. Palpi 2-segmented. Gen. *Austrochirus* nov.
- 5 Legs I and II strongly flattened and incurved hook-like on apical segments; tarsus IV also incurved and hook-like. Dorsal scuta? Gen. *Campylochirus* Trt. 1893
 = *Chirodiscoides* Hirst 1917
 Legs I and II not flattened or markedly incurved; tarsus IV normal. Coxae II with stout blunt inner tooth. Dorsal scuta? Gen. *Listrophoroides* Hirst 1923
 nec Ferris 1932
- 6 Body depressed. 7
 Body compressed. 8
- 7 Legs I and II broadened distally into a truncate shovel-like shape. Gen. *Schizocarpus* Trt. 1896
 = *Haptosoma* Kramer 1896
 Legs I and II about same width for most of their length, 1-segmented, flattened, hollowed internally, curved and pointed distally. Legs III and IV normal with caruncle. Gen. *Chirodiscus* Trt. and Neum. 1890
- 8 Legs III and IV short and stumpy, without caruncles, 3-5-segmented almost vestigial. One anterior dorsal scutum. Gen. *Labidocarpus* Trt. 1895
 = *Alabidocarpus* Ewing 1929
 Legs III and IV long, slender with caruncles, 5-segmented, doubled forward beneath abdomen. One anterior dorsal scutum. Gen. *Neolabidocarpus* Gunth. 1942
- 9 Legs III and IV similar in both sexes and ending in a transverse disc, with 2 stout setae on distal segments. Gen. *Trichoccus* Canestri 1899
 = *Trichobius* Can. 1897 pre. occ.
 Legs III and IV dissimilar in two sexes, not as above. No dorsal scuta. Palpi 3-segmented, apparently. Gen. *Myocoptes* Clap. 1869
- 10 Coxae III separated. One anterior dorsal scutum. Gen. *Listrophorus* Pagenst 1861
 Coxae III dilated and fused together. Gen. *Eurychiroides* n.n. for *Eurygonus* Trt. 1918 pre. occ.

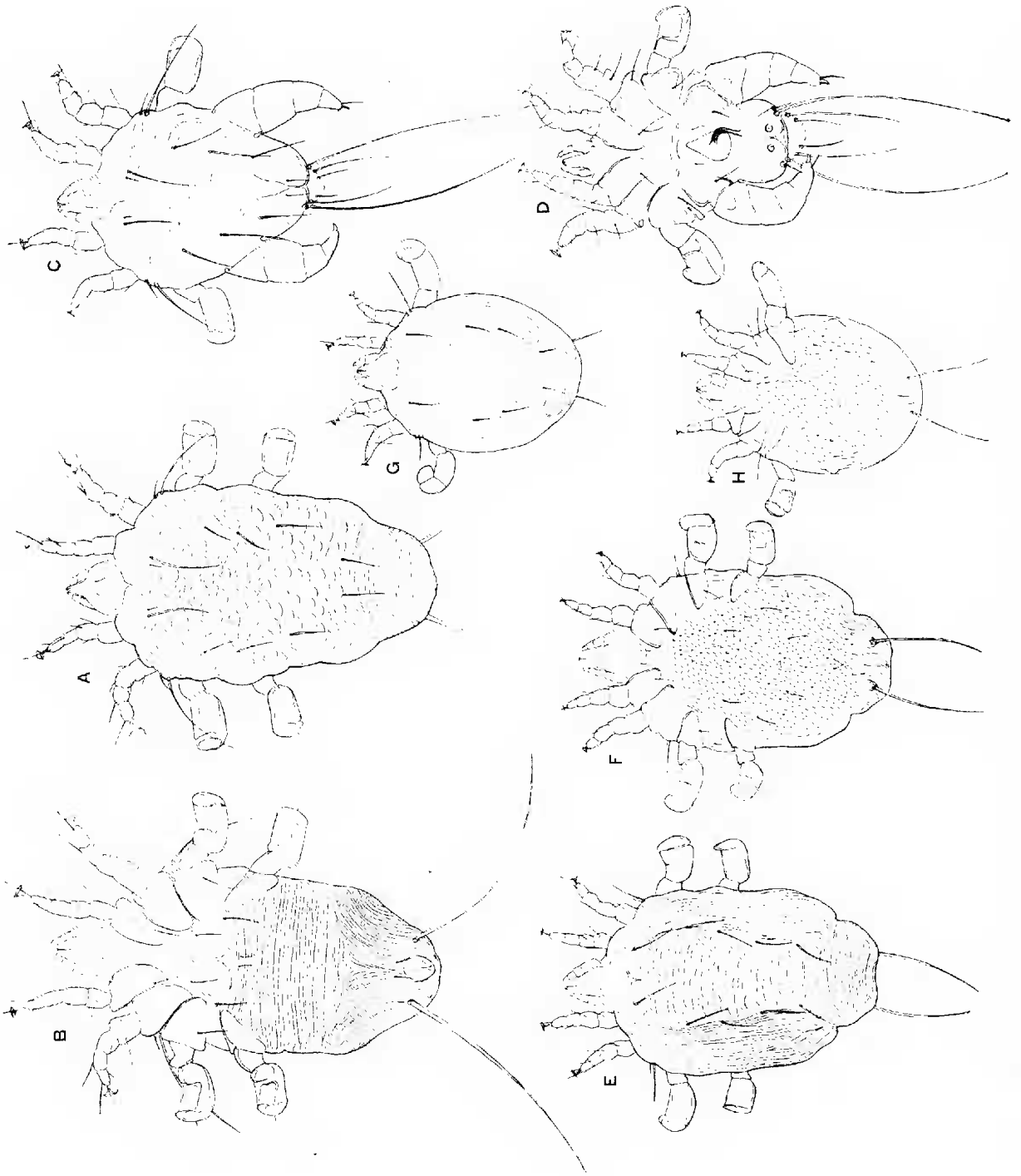


Fig. 1. *Myocoptes masculinus* Koch: A, ♀, dorsal; B, ♀, ventral; C, ♂, dorsal; D, ♂, ventral; E, nymph, dorsal; F, nymph, ventral; G, larva, dorsal; H, larva, ventral.

Subfamily MYOCOPTINAE Gunther 1942

Proc. Linn. Soc. N.S.W., 67, (304), 109.

Genus MYOCOPTES Claparede 1869

Z. Wiss. Zool., 18, 532.

MYOCOPTES MUSCULINUS C. L. Koch 1844

Sarcoptes musculus C. L. Koch 1844. C.M.A., fasc. 5, fig. 13.*Myocoptes musculus* Can. and Kr. 1899, Das Tierreich, Lfg. 7, 25.

(Fig. 1, A-H)

Numerous specimens of this European species were found on laboratory white mice by Mr. H. B. Carter of the MacMaster Laboratory, Sydney. The mice were of a strain introduced from England, and the effect of the mites was to produce a type of mange for which Mr. Carter proposes the name of "Myocoptic Mange."

As far as I have been able to ascertain the adult stages only have been described or figured. In the material sent to me for study the larval and nymphal stages are represented, and the opportunity is taken to describe and figure the three stages in detail.

Description—Adult ♀ (fig. 1, A, B). Length 320 μ , width 160 μ . Dorsally with a pair of short setae on capitulum, on shoulders with a very long seta and anterior of this a short seta; on dorsum with 5 rows of 2 setae, the anterior row long and with a pair of short, fine setae inside; the other four pairs of setae moderately long. Ventrally with one fairly long seta on coxa I and III, a pair of about the same length between coxae III and IV, a short median pair between coxae IV, and also just anterior of anus; and a very long pair of setae subapically. The dorsal cuticle is transversely striated in the posterior fourth, anterior of which the striations become broken and roughly scaliform. Ventrally the cuticle is transversely striated but entirely lacks the fine points of the nymphs and larvae.

Adult ♂ (fig. 1, C, D). Length 210 μ , width 155 μ , rather more ovate than in ♀. Dorsal and ventral setae much as in ♀, but the cuticle is only coarsely marked with striations. Ventrally with the setae also as in ♀; posteriorly with a pair of anal discs and two pairs of long extra setae. Leg IV stout and thick and differing from III, which is similar to leg III and IV of ♀; penis bent and 2-pronged; no ventral striations.

Nymph, ♀ (fig. 1, E, F). Length 255 μ , width 160 μ . Dorsal and ventral chaetotaxy as in adult ♀. Dorsum longitudinally striated laterally and transversely so on posterior fourth, medially with broken transverse lines. Ventrally longitudinally striated narrowly laterally, and in between with transverse lines with numerous fine points.

Larva (fig. 1, G, H). Length 185 μ , width 130 μ , broadly oval, the third pair of legs modified for grasping hair. Dorsally the cuticle is longitudinally striated for a narrow width all round, and medially with broken curved transverse lines. Ventrally with lateral longitudinal and medial transverse lines, both with fine points, as figured. Leg IV is indicated by a slight tubercle (cf. fig. 1, H). Chaetotaxy simpler than in nymph.

Subfamily ATOPOMELINAE Gunther 1942

Proc. Linn. Soc. N.S.W., 67, (3 and 4), 109.

Genus *Marquesania* nov.

Ferris, 1932, in describing his species *Listrophoroides expansus* from the Marquesas, was somewhat doubtful about the generic placing and had in mind

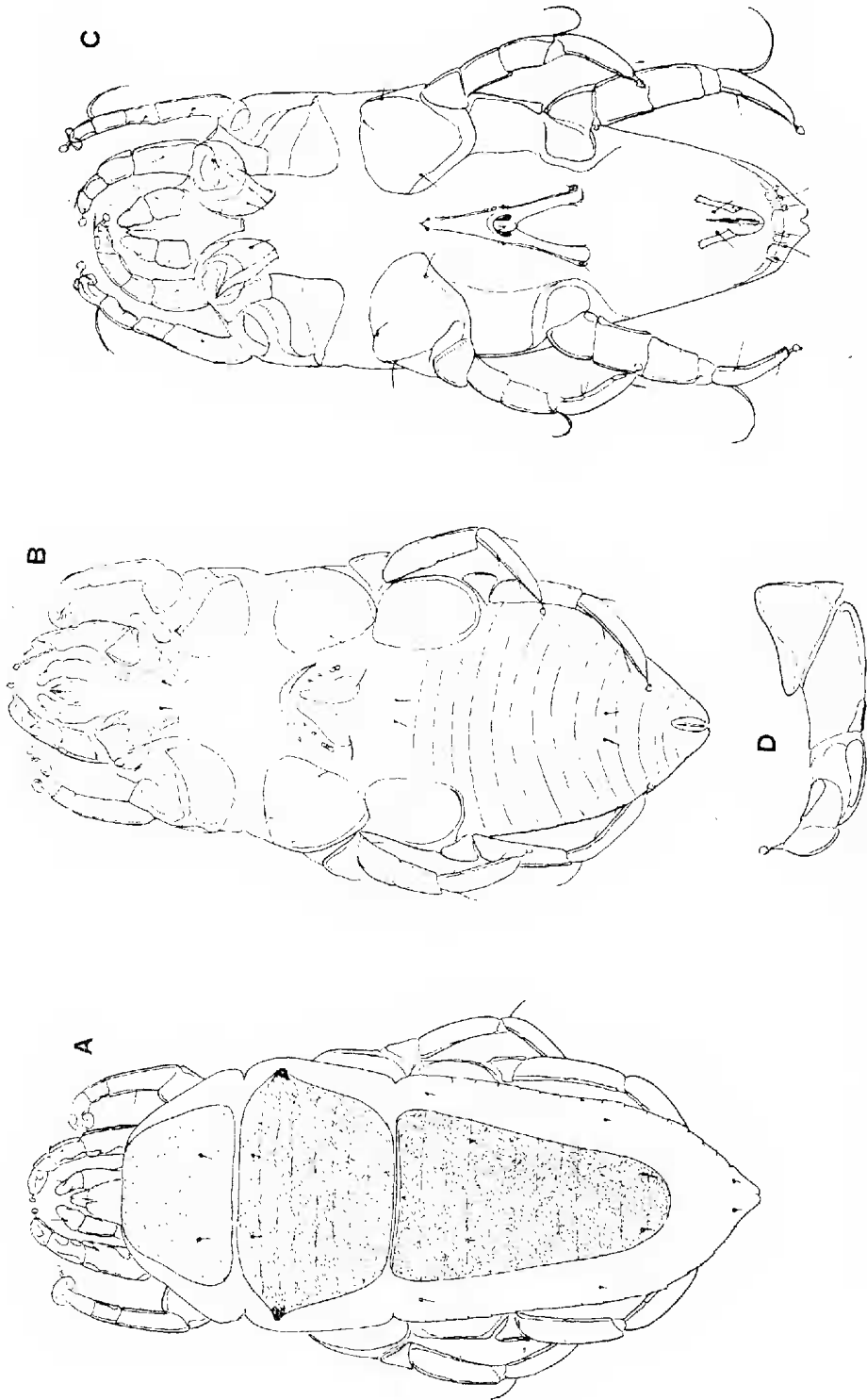


Fig. 2. *Marquesatella rypnasa* (Ferris) v. *quecstandica* nov.: A. ♀ dorsal; B. ♀ ventral; C. ♂ ventral; D. leg I of ♀.

the possibility of a new genus being required. There are many points of difference between his species and the genotype of *Listrophoroides (aethiopicus)* Hirst 1923), and I propose the above new genus with *Listrophoroides expansus* Ferris as genotype. It is to be separated from *Listrophoroides* Hirst and the other genera of the subfamily as given in the key.

MARQUESANIA EXPANSA (Ferris 1932)

= *Listrophoroides expansus* Ferris 1932, B. P. Bishop Museum, Bull. 98.

The typical form of this species is discussed under the new variety *queenslandica*. It has been admirably figured and described by Ferris.

Loc. and Hosts—Three specimens, conforming entirely with the description and figures, were collected from the debris of a jar containing bats in the South Australian Museum collections, numbered M4443-53, 3576, 501 and 500. No locality is given and even the host is doubtful. Ferris' material was from rats, and it is quite possible that the spirit in which the bats were preserved may at some time have been poured off specimens of rats.

var. **queenslandica** nov.

(Fig. 2, A-D)

Description—♀. Length 430 μ , width 170 μ , elongate, flattened dorsally, with three lightly chitinised finely pitted scuta (cf. fig. 2 A), second and third scuta with irregular transverse lines. Palpi 2-segmented, short and stout. Front legs modified for grasping hair; leg I with lateral sclerotisations, the outer sclerite on femur somewhat as in *M. expansa* f.p., but apparently not as pronounced and not free; leg II with the terminal segment ending in two lateral anchor-like hooks; legs III and IV long, cylindrical and fairly slender; all legs with small caruncles, and without claws. Eyes absent. Dorsal setae small and few, as in fig. 2 A. Ventrally the coxae are in two groups, large and finely pitted, not striated as given for coxae I and II of *expansa*; a pair of small setae between coxae I, a seta on each of coxae II, three setae on coxae III, and a pair between coxae IV, a median pair anterior of anus. Genitalia between coxae III.

♂. Length 345 μ , width 140 μ . Generally as in ♀ but legs III and IV much stouter and the subbasal seta on tarsi II, III and IV longer and stronger and recurved. Subapically on venter are six clavate processes from which arise fine setae, the median one of each three being the longest. Apex of abdomen slightly incised. Genitalia between coxae II and coxae IV (cf. fig. 2 C).

Loc. and Host—Many specimens of both sexes from rats, Queensland; Cowan Cowan, September 1938, on *Rattus youngi*, (Smith); Cairns, 1939, on rat (No. 6) (W. G. Heaslip).

Remarks—This form, which at the present time I am not relegating to more than a variety of *M. expansa* Ferris from the Marquesas and ? Australia, differs mainly in the lack of striations on coxae I and II and the apparent absence of a pronounced tooth on the femur of leg I.

Genus **Austrochirus** nov.

Elongate, dorsally compressed, with only an anterior chitinised scutum. Legs I and II curved inwards and modified for grasping hair. Coxae in two groups, epimera meeting in mid-line in all pairs. Leg IV of ♂ very much stouter than in ♀. Caruncles present on all tarsi. Genotype **Austrochirus queenslandicus** n. sp.

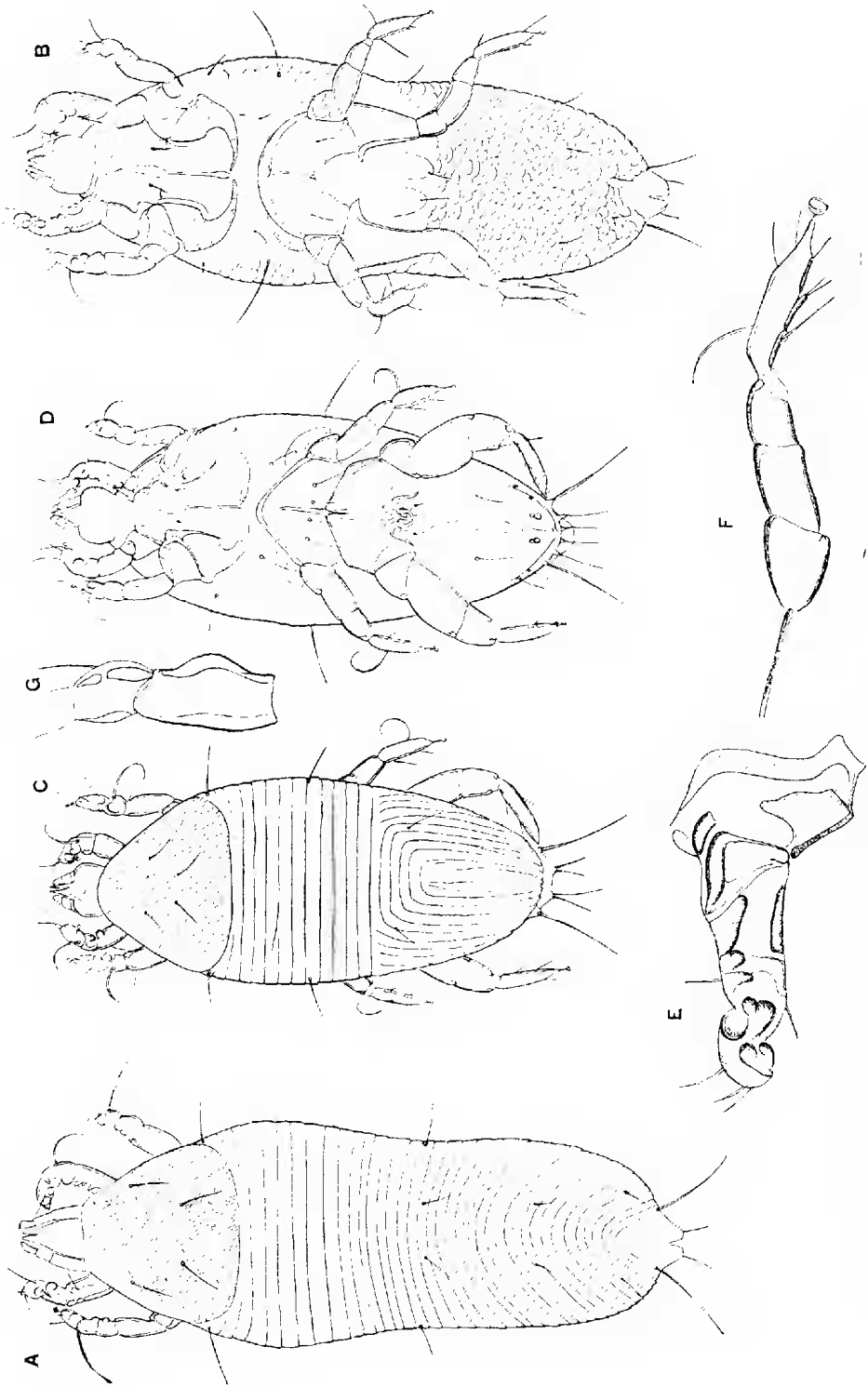


Fig. 3 *Austrochirus queenslandicus* g. et. sp. n.: A, ♀ dorsal; B, ♀ ventral; C, ♂ dorsal; D, ♂ ventral; E, leg I of ♀; F, leg IV of ♀.

Austrochirus queenslandicus n. sp.

(Fig. 3, A-G)

Description—♀. Length 515 μ , width 200 μ ; elongate, slightly wider in anterior half. Palpi 2- (?3-) segmented (cf. fig. 3 G). Legs I and II fairly short, apical segments strongly sclerotised laterally to form rounded knobs for grasping hair, metatarsus (?) with long recurved seta; legs III and IV somewhat longer, segments cylindrical, tarsi apically rather tapering. Coxae large, touching medially and partially pitted, not striated. Genitalia between coxae IV. Dorsum anteriorly with a chitinised pitted scutum occupying the whole width of animal and extending posteriorly to end of coxae II, with two pairs of fine setae; rest of dorsum coarsely transversely striated. Ventrally as in fig. 3 B, a pair of setae on coxae I and III, a pair between coxae II and III and between coxae IV; on the venter the dorsal striations become scale-like. Apex of abdomen slightly incised and with two long setae and a pair of small ones.

♂. As in ♀ but a little smaller. Length 480 μ , width 170 μ . The transverse dorsal striations end at about the level of coxae III, thereafter they are longitudinal. Ventrally there are two pairs of setae on coxae III. Genitalia between coxae IV. Leg IV is very much stouter than in the female (fig. 3 D). A pair of small anal discs on each side of the anal opening.

Loc. and Hosts—A number of specimens from a possum. Brisbane, Queensland, 1938 (Smith).

Remarks—That this species will not fit into any known genus of Listrophoridae and requires a new one will be evident from the key to subfamilies and genera.

Subfamily LABIDOCARPINAE Gunther 1942

Proc. Linn. Soc. N.S.W., 67, (3 and 4), 109, 1943.

Genus LABIDOCARPUS Trt. 1895

Bull. Soc. ent. France, 38, 1895. Type *L. rollinatti* Trt. 1895).= *Alabidocarpus* Ewing 1929, 188. (Type *L. megalonyx* Trt. 1895).**Labidocarpus recurvus** n. sp.

(Fig. 4, A-C)

Description—♀. Laterally compressed. Length 620 μ , depth 205 μ . With an anterior chitinised scutum. Abdomen posterior of scutum strongly transversely striated. Legs I and II short and stumpy, modified for grasping hair, segmentation indistinct, thickened and flattened; legs III and IV long, 5-segmented, tarsus provided with a long curved claw, and two spurs on III, one spur on IV, tibia with a long apical recurved seta. Apically on the abdomen with a pair of long and a pair of short setae; on the shoulders between coxae II and III a long seta.

Loc. and Hosts—A single specimen from Bathurst, New South Wales, 15 March 1934 (A. S. Allman), on the hair of a bat.

Remarks—This species would come into Ewing's genus *Alabidocarpus* as differentiated by the presence of a pair of spurs on the tarsus of leg III, but this separation does not seem to be justified as suggested by Gunther, 1942. It comes nearest to *L. nasicolus* Lawrence 1938 from Natal, but differs in that the spurs of tarsus II are only one-fifth the length of claw instead of nearly one-half. Like

nasicolus it is intermediate in size between *megalonyx* Trt. and *minor* Trt. from the European horse-shoe bat. Gunther, in his key (1942), also separates *Neolabidocarpus* from *Labidocarpus* in that it has five- and not three-segmented legs III and IV. In both *nasicolus* and the above new species are these legs.

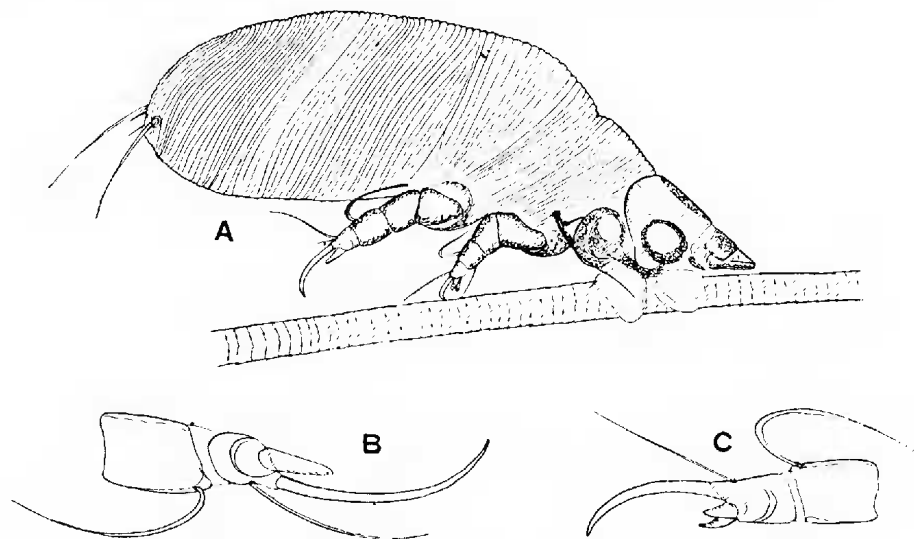


Fig. 4 *Labidocarpus recurvus* sp. n.: A, lateral view of ♀; B, tarsus IV; C, tarsus III.

although not slender and not provided with caruncles as in *Neolabidocarpus*, with five very distinct segments. In this respect they differ from the European species which, as figured by earlier workers, have only 3-segmented legs III and IV.

Subfamily LISTROPHORINAE Gunther 1942

Proc. Linn. Soc. N.S.W., 67, (3 and 4), 109, 1942.

Genus LISTROPHORUS Pagenstecher 1861

Z. Wiss. Zool., 11, 105, 156, 1861. (Genotype *L. gibbus* Pgst., 1861.)

LISTROPHORUS GIBBUS Pagenstecher 1861

loc. cit., 156, pl. 17.

(Fig. 5, A-D)

Description—♀. Broadly oval, length 430 μ , width 275 μ . Dorsum with one anterior scutum (fig. 5 A), behind which it is strongly transversely striate, apex more or less rounded, apparently devoid of setae. Gnathosoma broadly truncate. Legs short, not specially modified, tarsi all with caruncles. Ventrally striated as in 5 B. Coxae non-striate.

♂. Rather narrower than in ♀, the dorsal scutum somewhat longer. Posteriorly produced in a more or less parallel-sided and apically bifurcate process (cf. fig. 5 C, D), with a pair of anal discs. Genitalia between coxae III and IV. Legs relatively longer and somewhat stouter than in ♀. All tarsi with caruncles; tibiae II with a long apical seta. Length 500 μ , width 205 μ .

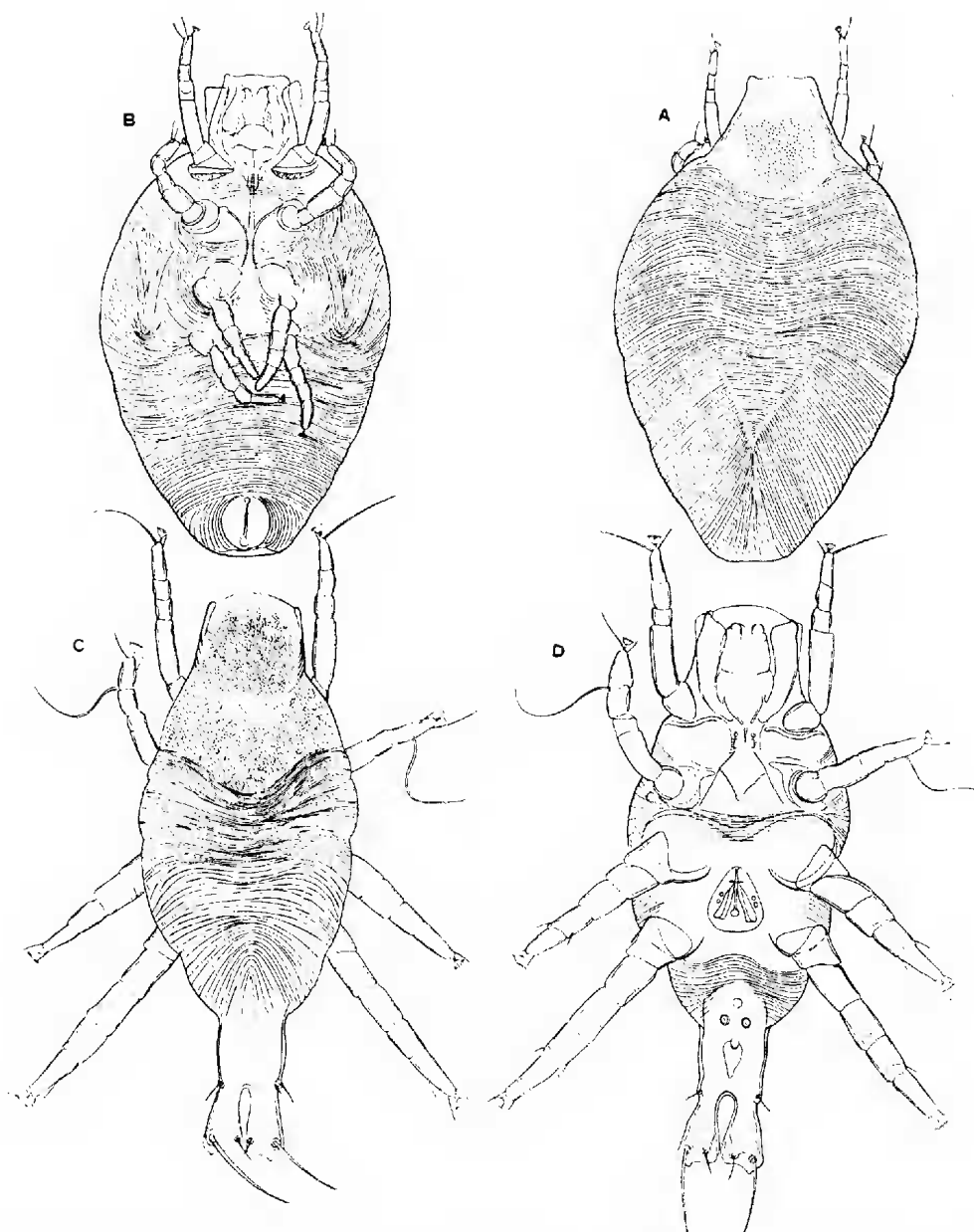


Fig. 5 *Listrophorus gibbus* Pgst.: A, ♀ dorsal; B, ♀ ventral; C, ♂ dorsal; D, ♂ ventral.

Loc. and Host—This species occurs in the fur of rabbits and is undoubtedly introduced from Europe. I have specimens as follows:—Australia: on rabbits, near Melbourne, Vict., Nov. 1941 (W. M. M.). New Zealand: on Angora rabbits, Ashburton, 1935 (L. M.).

Genus **Eurychiroides** nom. nov.

This name is proposed for *Euryzonus* Trt. 1918 (Bull. Soc. Zool. Fr., 42, 155), which is preoccupied by *Euryzonus* Attems, 1900 (Denskskr. Akad. Wiss., Wien, 68, 265), for a Myriapod.